

duced to uniform temperature ( $32^{\circ}$  Fahr.), and the monthly means found, by officers of the Government survey of the lakes, as follows :

J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Mean.
29.385	.368	.307	.334	.300	.356	.356	.352	.386	.372	.338	.403	.355.

Projecting a curve with these figures, and drawing a line bisecting the slopes of the several undulations (to represent the earth's orbit), you will find a tide with four maxima and four minima corresponding very nearly with the cardinal points of the ellipse."

Nominations Nos. 568 to 572 were read.

And the Society was adjourned.

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*Stated Meeting, April 5, 1867.*

Present, sixteen members.

Dr. Wood, President, in the Chair.

Letters were read from the Geological Bureau of Sweden, dated November 1, 1866; from the Royal Society of Sciences at Upsal, 1st October, 1866; from the Royal Academy of Naturalists at Vienna, October 30, 1866, severally announcing donations to the Library; also from the Nicolai Observatory at Pulkowa, June 12, 1866; from the Royal Society of Sciences at Upsal, September 15, 1866; from Royal Asiatic Society, London, December 17, 1866; from the Boston Society of Natural History, March 25, 1867; and from the Smithsonian Institution, Washington, February 20, 1867, severally acknowledging the receipt of publications of this Society.

Donations for the Library were announced, viz. : From the Imperial Russian Geographical Society; from the Nicolai Observatory at Pulkowa; from the Bureau of Geological Research of Sweden; from the Imperial Society of Naturalists at Moscow; from the Royal Society of Sciences at Upsal; from the Royal Academy of Sciences at Vienna; from the

Royal Academy at Munich; from the Royal Dublin Society; from the London Geological Society; from the London Meteorological Society; from the Royal Asiatic Society, London; from the Royal Institution of Great Britain; from the Ordnance Survey Office of England; and from the Franklin Institute.

Mr. Fraley announced the death of John Penington, a member, which occurred on the 18th March, 1867, in the 68th year of his age.

Mr. P. E. Chase made some remarks upon an apparent discrepancy between the tidal theories of Delauney and Airey.

Dr. H. C. Wood, Jr., made the following remarks:

MR. PRESIDENT: My apology for the following account of some investigations, which I have recently been engaged in making, must be the interest they have excited in myself, and the fact, that they are confirmatory of the life history of the European congeners of the plant, as worked out by Pringsheim, Henfrey, and others, and that they are the first observations that I know of on an American form. The little plant constitutes the filamentous confervoid growth, which has so annoyed the aquaria cultivators in this city. The specimens which were studied, grew spontaneously on the Hornwort (*Ceratophyllum*) in my aquarium. It without doubt belongs to the genus *Ædogonium*. The growth of the filament takes place by the formation of new cells, both amongst the older ones and at the distal free end. When an old cell is about to undergo division, a small streak-like fissure appears near its distal end, dividing entirely the outer cellulose wall. This takes place principally in those cells which are well filled with a greenish granular protoplasm. The latter now increases in length, becoming at the same time less dense, more transparent, and soon separates the two sundered parts of the old cell-walls, bearing the upper portion like a little cap on its distal end. As soon as the fissure is well pronounced, a partition separating the lower portion of the old cell begins to be apparent, and the new portion is cut off and commences its existence as an independent cell. In a very little while a cellulose wall is formed, and the cell having attained sufficient size, recommences the process which gave it birth.

The distal cells appear to grow by a kind of pullulation, from the primordial utricle, a portion of the distal end of the terminal cell elongating into a long cell, whose calibre of course does not equal that

of its parent. This continues to grow in length, without increasing very greatly in diameter, and, without obtaining any endochrome, gives origin to a new cell of still less calibre than itself by the same process of pullulation, which is repeated again and again, until finally a number of cells are produced, severally of less diameter than the preceding, none of which contain endochrome. In this way a filament is formed, which gradually tapers to a long slender point and is ended by a very narrow cell, apparently consisting simply of a primordial utricle. Reproduction in this plant takes place both by zoospores and resting spores. In the formation of the former only a single cell is concerned. The whole endochrome of such a cell contracts itself into a mass of a more or less globular shape. When the zoospore is sufficiently developed to enter upon its independent existence, an opening for its exit is obtained at the distal end of its parent cell by the separation of the two cells, in a sort of hinge-like manner, they remaining attached at one corner. No ciliary motion takes place before the exit of the zoospore, but the latter is coated by a thick gelatinous layer, and the motion during its passage from the cell is so slow as to be scarcely perceptible. In a little while this gelatinous coat dissolves off, the zoospore begins to exhibit a rocking motion, oscillates more rapidly, and finally darts off on its career.

According to Mr. Henfrey, some of these zoospores develop into the ordinary filament, whilst others on germinating produce only male plants; of this I cannot speak, as I have never seen a zoospore develop. When a resting spore is about to be formed, two cells join themselves, the proximal cell of the two emptying its endochrome into the other, through an opening in the wall, which becomes very much swollen and crowded with the contents of the two, and finally assumes in our species a somewhat globular form, with its contents gathered into a dense protoplasmic ball, not filling the case. Whilst this has been going on in our species, the male filaments appear, generally on the emptied cell; at first this is composed of a single cell, but in a little while a second distal one is formed, and finally spermatozoids appear in the latter; never that I have seen more than two being formed in the species under consideration. The spermatozoids differ from the zoospores, in that they are much smaller and are not colored green. At this time an opening takes place in our species, in the proximal portion of the sporangium, through which it is said the impregnation takes place by the entrance of the spermatozoids. I have watched the latter swimming around the orifice, but have never

seen them enter. After impregnation I believe the opening closes, though this point is not absolute, and the spore matures, changing from its dark green to a dark reddish-brown.

The species whose life history I have studied, is nearly allied to *Æ. Rothii* of Europe, but is I believe distinct and undescribed. I would offer for it the name *Ædegonium Huntii*, after Dr. J. G. Hunt, to whose aid and direction, whatever success may attend any microscopical researches I may make, will be due. I append a technical description.

*Edogonium Huntii*. Gynandrous. Male plant slightly curved, attached by a small foot, generally, to the cell which has been emptied in making sporangium, two-celled; sporangium round, often somewhat hexagonal, slightly expanded in the middle, opening below the median line. Spore globular, not filling its case, furnished with four raised ridges, about  $\frac{1}{500}$ th of an inch in diameter.

The color of this plant is a bright yellowish-green, deepening to a very dark green in cells which are crowded with granular protoplasm. The size of the filaments varies very much; the largest attain a diameter of  $\frac{1}{500}$  of an inch. All of the zoospores which I have seen were globular.

Prof. Cresson described a brilliant meteor which he observed at about 7h. 40' this evening.

Nominations Nos. 568 to 572 were read.

The President announced the names of the committee to aid the trustees of the fire-proof building fund.

And the Society was adjourned.

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*Stated Meeting, April 19, 1867.*

Present, nineteen members.

Prof. CRESSON, Vice-President, in the Chair.

Letters were read from Rear Admiral Davis, United States Navy, dated March 20, 1867, announcing a donation to the Library; also from a number of gentlemen of Philadelphia,